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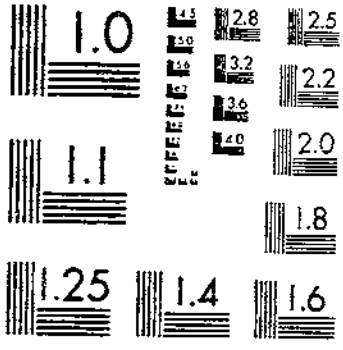

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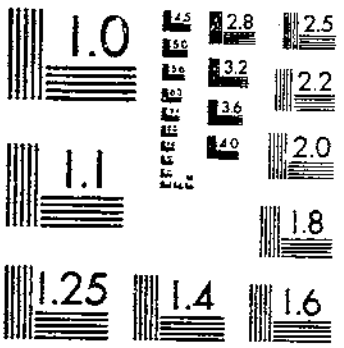

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Forecasting Retail Values and Spreads for the Market Basket of U.S. Farm Foods

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FORECASTING RETAIL VALUES AND SPREADS FOR THE MARKET BASKET OF U.S. FARM FOODS, by Theresa Y. Sun, National Economic Analysis Division, Economic Research Service, U.S. Department of Agriculture. Technical Bulletin 1578.

ABSTRACT

Three quarterly models were used, based on 1965-75 data, to examine the statistical relationships between the retail value, the farm value, and the spread of a fixed sample of food products included in the market basket. The first model gives quarterly expected price indices and price flexibilities for meat, dairy, poultry, and eggs at retail and farm levels. Quarterly projections for the retail values of nine different product groups of the market basket and their total values were obtained from the second model. The third model gives estimates of the systematic variations between the spread and food values at retail and farm levels of the market.

KEY WORDS: Market basket, retail value, farm value, spread, statistical relationships, price flexibility.

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GLOSSARY

Market basket - A sample of fixed quantities from 65 domestically produced food products purchased by a typical urban family with a moderate income.

Retail value - Cost to consumer for the food products included in the market basket.

Farm value - The return to farmer for an equivalent quantity (adjusted for by-product) of the farm product sold at the retail market.

Price spread - The difference between retail and farm values.

Farmer's share - The amount the farmer receives from each dollar the consumer spends for a food product.

SUMMARY

Three models are specified to estimate the expected quarterly retail values and farm retail price spreads of the total and individual groups of the market basket of U.S. farm foods and examine the relationships between the price spreads and respective farm and retail values.

The first model employs price-quantity relationships to estimate indices of prices, at both retail and farm levels, for meat, dairy products, poultry, and eggs. Comparisons of the estimated and reported retail price indices (1967=100) for the first quarter of 1976 revealed that the regressions underestimated retail price indices for meat and poultry by 1 percent and dairy products by 5 percent. Retail egg price indices were overestimated by 1 percent. The 1976 fourth quarter retail price indices for these four product groups were estimated to be 193.35, 165.47, 171.60 and 180.73.

Price-consumption flexibilities obtained for the dairy products are not significantly different from zero at the 5-percent probability level. For the other products, meat has a quarterly price-consumption flexibility of -1.3 at retail and -2.3 at the farm level. The price flexibility for poultry is estimated to be -1.2 at retail and -2.5 at the farm level. For eggs, the price flexibility is -2.6 at retail and -4.0 at the farm level.

The model's price-income flexibilities for eggs are not significantly different from zero at the 5-percent probability level. They are about unitary for meat at both retail and farm levels. The retail price of poultry products also tends to increase by the same proportion as an increase in income. The price of this product group increases more than proportionately at the farm level, about 14 percent with a 10-percent increase in income. The price of dairy products responds less than proportionately to changes in income. Price-income flexibilities are about 0.7 at the retail level and 0.8 at the farm level.

The second model examines the theory that in the short run the retail value of a product is influenced either by its current or its lagged farm values. Based on different statistical assumptions about the error terms of the function, three equations were examined for the total and nine individual product groups of the market basket. A best statistical relation, based on standard statistical criteria and *a priori* economic concepts was derived for each product group.

Using the farm values approximated from the product supply prices, these equations were applied to estimate the expected retail values of the different product groups as well as the total market basket retail values for the fourth quarter 1975 and the four quarters of 1976. Comparisons of the estimated and reported retail values of the total market basket for the fourth quarter of 1975 showed that the regression overestimated the fourth quarter retail value by $10, or 0.5 percent. Estimates of the total market basket retail values for the four quarters of 1976 are: $1,933, $1,948, $1,961 and $1,940.

The third model uses the retail and farm values separately to calculate the farm-retail spread for each product group. The least squares results indicated that the variation in spreads is better explained by the retail

value than by the farm value. The retail value coefficients range from 0.2 to 0.5 for animal products and from 0.6 to 0.8 for processed and fresh crop products. Results from relationships between farm and retail values indicate that, on the average, the farm value of an animal product is more responsive to a change in its retail market value than a crop product. Seasonal changes in the spread are significant in the third and fourth quarters for fresh vegetables.

RETAIL VALUE, FARM VALUE, AND PRICE SPREAD FOR MARKET BASKET, 1950-75

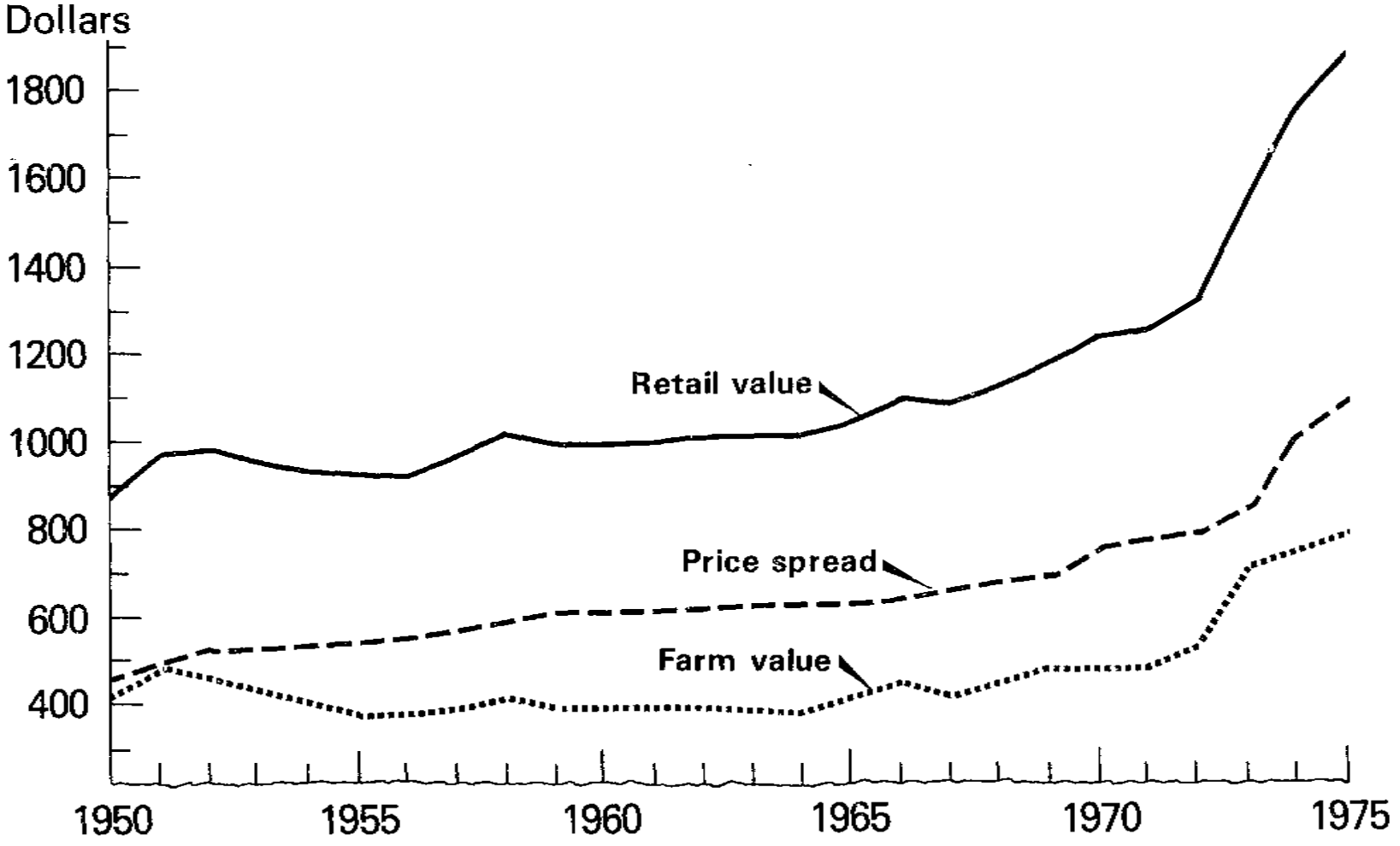

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Figure 1

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FORECASTING RETAIL VALUES AND SPREADS FOR THE MARKET BASKET OF U.S. FARM FOODS

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INTRODUCTION

Unexpected increases in domestic food prices during the past several years have stimulated considerable interest in the development of improved forecasting techniques. This report presents the results of an investigation of analytical techniques to forecast quarterly retail food values and farm-retail price spreads for the U.S. Department of Agriculture's market basket of U.S. farm foods and its nine product groups. Since fluctuations in farm and retail values of a product are related to the price spread, variations in the price spread with respect to either value are also examined. The period of analysis extends from the first quarter of 1965 through the second quarter of 1975.

The Market Basket

The market basket of U.S. farm foods, or market basket, is one of the most frequently referred to measures of domestic food cost. The basket represents a sample of fixed quantities of 65 domestically produced food products purchased by a typical U.S. urban family with a moderate income. The 65 items are grouped into nine categories: meat, dairy, poultry and eggs, bakery and cereals, fresh fruits, fresh vegetables, processed fruits and vegetables, fats and oils, and miscellaneous products (including sugar, spaghetti, grape jelly, and chicken and bean soups).

Retail values, farm values and price spreads (see glossary) for these product groups are reported monthly, quarterly, and annually by the U.S. Department of Agriculture. Since the quantity weights in the market basket are fixed, the retail and farm values serve as indices for measurements (in dollar terms) of retail and farm price changes over time. The price spread is an index or measurement of price change for marketing services. The farm-retail value ratio reflects the relative changes in farm and retail prices.

Since retail food prices are composed of returns to farmers and marketing agencies, examining the components of the food dollar reveals what has been happening to the retail prices. Figure 1 depicts movements of the retail value, farm value, and price spread for the market basket of farm foods since 1950. Generally, the farm-retail spread has risen about in line with the retail price level, reflecting increasing costs for marketing services received by consumers. The farm value, however, has behaved differently. Beginning with the early fifties, the farm value decreased sharply and stayed at the lower levels until the mid-sixties. As a result, the retail value dipped during the early fifties, but not as sharply as the farm value; it

later increased, but not as much as the spread. Before 1972, rising marketing costs were the major cause of higher retail values, but since that time, increasing fluctuations in the farm values have contributed significantly to the rise.

Procedure

There are several ways to estimate retail values of the market basket food products. One method is to estimate these values from the consumer's market, using quantity consumed and income as influencing factors. Another method is to estimate retail values from the supply prices of food products. Implicit in this approach is the assumption that, in the short run, food prices are determined by farm level developments. A third approach is to study retail values through their two components: payments to farmers (the farm values) and payments to middlemen (the spreads).

Since we do not have complete cost and profit observations for the different product groups, an alternative approach is to use the marketing agencies' markup policy to estimate price spreads. Such relationships may enable us to examine the systematic variations between the spread and retail or farm values for each product group. The spread-value relationship can also be transformed into the relationship between farm and retail values, thus obtaining a measure of the influence of a change in the retail value on the farm value.

Data and Methods

Data series used included (1) quarterly retail values, farm values, and price spreads for the total and the nine groups of food products included in the market basket, and (2) quarterly indices (1967=100) of prices transformed from the market basket data, and per capita food consumption and disposable income. Price and consumption data are for meat, dairy products, poultry, and eggs only.1/ The period of these quarterly series extends from the first quarter of 1965 through the second quarter of 1975. All of these data series are listed in appendix tables 2-6.

Most of the equations in this study were estimated by ordinary least squares. For the second model, when lag and autocorrelation coefficients were present, an iterative procedure of autoregressive least squares was used to estimate the nonlinear parameters.

ECONOMETRIC MODELS

In this section, the three different models used to estimate the prices, values, and spreads of the market basket food products are developed. Besides forecasting, the structural coefficients obtained from these models give information on the nature of demand for the various product groups.

1/ Poultry and eggs are treated as separate groups in the price-quantity analysis. They are treated as a single group in the other models.

Variable Definitions

D_k = Seasonal dummies, k = 2,3,4

M_t = Value of the farm-retail price spread of a product group for quarter t

P_{ft} = Index of farm price of a product group of the market basket for quarter t (1967=100)

P_{rt} = Index of retail price of a product group in the market basket for quarter t (1967=100)

Q_t = Index of per capita consumption of a product for quarter t (1967=100)

t = First quarter 1967 through second quarter 1975

u_t, u_{t-1} = Current and lagged error terms of the equation that follow a first order autoregressive scheme.

V_{ft-i} = Current or lagged farm value of a product group, i = 0,1

V_{rt-j} = Current or lagged retail value of a product group, j = 0,1,2

Y_t = Index of per capita disposable income for quarter t (1967 = 100)

λ = The geometric rate of adjustment of the retail value with respect to a change in the lagged farm value of the product group.

ρ = The first order autocorrelation coefficient.

ε = Error term of the equation that fulfills the least squares error criteria

Price-Quantity Relationship

In the pure theory of demand, consumer behavior is generally represented by a demand curve which shows quantities of the commodity that a consumer is willing to buy at various prices. Because of the nature of production and the short storage life for farm food products, supply is usually predetermined and equals consumption in a short period. Food prices at the consumers' market will therefore vary according to quantity supplied. In other words, consumer behavior may be represented by a price-quantity relationship where price is the dependent variable and quantity the independent variable.

Quantity consumed, however, is not the only factor that may cause adjustment in the agricultural product prices. The size of population, consumer income, prices of competitive commodities, and consumer tastes and preferences also affect the price-quantity relationship. The influence of population is often introduced by expressing consumption and income variables on a per capita basis. Consumer tastes and preferences are often captured through the use of a trend variable. Since income is highly correlated with time, a trend is not

used in the price-quantity relationship of this analysis. Instead, seasonal dummies are included to measure seasonal patterns of price variation of the product groups. Since each product group possesses certain distinctive characteristics, substitution between groups of products is expected to be small. The functional relationships at the retail level, linear in both natural and logarithmic forms, are as follows:

$$(1) \qquad P_{rt} = a_1+b_1Q_t+c_1Y_t+d_1D_2+e_1D_3+f_1D_4+u_t$$

$$(2) \qquad \log P_{rt} = \log a_2+b_2\log Q_t+c_2\log Y_t+d_2\log D_2+e_2\log D_3+f_2\log D_4$$

In order to compare price changes with respect to consumption and income at both retail and farm levels, the derived demand was also estimated by substituting the farm price for the retail price in the preceding equations.

Retail-Farm Value Relationship

The concept that consumer demand significantly influences the market price for a product is not necessarily true in all cases. Some economists (Waugh (7), Barr and Gale (1)) believe that it is only in the long run that food prices at the retail market are determined by what the consumers can and will pay.2/ In the short run, food prices are made at the farm, and what consumers pay for a food product is determined by the farm price received plus various charges for processing and distribution. In other words, the producers' supply is the dominant factor influencing the market price for a product. Actually, changes in prices, whether caused by changes in demand or supply, usually are initiated at an early stage of marketing. This may be at the primary wholesale market, at the processor sales level, or at decentralized markets in which the farmer sells. The price change in the early stage of marketing is passed on to retailers as the product flows through the marketing system. For instance, hog buyers at the farm level may notice a decline in marketing and raise the price of hogs at the farm. This may influence the retail price of pork. Under such a circumstance, a price change at retail level may lag considerably behind that at the farm, although the length of the lag depends on how slowly a particular product moves through the marketing system. With this in mind, the basic commodity groups were examined with three variants of the relationship between the retail and farm values.

The autoregressive least squares equation: The theoretical assumption of this equation is that the retail value of a product is primarily influenced by its farm value and seasonal changes. The error term of this equation follows a first order autoregressive scheme because preliminary least squares estimation produces significant Durbin-Watson statistics for most of the products tested. After statistical manipulation, the resulting equation has lagged retail and farm values with nonlinear parameters.

$$(3) \qquad V_{rt} = a_3(1-\rho)+b_3V_{ft}-\rho b_3V_{ft-1}+\rho V_{rt-1}+c_3D_2+d_3D_3+e_3D_4+\varepsilon_t$$

$$\varepsilon_t = u_t-\rho u_{t-1} \qquad -1<\rho<1$$

2/ Underscored numbers in parenthesis refer to references listed at the end of this report.

The Koyck distributed lag equation: The theoretical assumption of this equation specifies that a change in the farm value of a product brings about its full effects on the retail value of that product only after a certain lapse of time. A distributed lag effect is therefore felt at the retail level after a change in its farm value. The length of time or the form of the lag is determined by the character of the farm product. Following Koyck that lagged effects can be approximated by a convergent geometric series, the reduced form equation has a one-term lagged retail value as the influential factor.

$$(4) \qquad V_{rt} = a_4(1-\lambda)+b_4V_{ft}+\lambda V_{rt-1}+c_4D_2+d_4D_3+e_4D_4+\varepsilon_t$$

$$0 \leq \lambda \leq 1$$

The error term in this equation is assumed to be serially independent.

The Koyck and autoregressive error equation: In the Koyck distributed lag model, the error term is usually autocorrelated. Assuming the error term follows a first order autoregressive scheme,

$$\varepsilon_t = u_t - \rho u_{t-1}$$

then

$$(5) \qquad V_{rt} = a_5(1-\lambda)(1-\rho)+b_5V_{ft}-\rho b_5V_{ft-1}+(\lambda+\rho)V_{rt-1}-\lambda\rho V_{rt-2}+c_5D_2 + d_5D_3+e_5D_4+\varepsilon_t$$

Spread-Value Relationship

The spread is an integral part of the factors that influence retail and farm values of a product. One method of estimating the spreads of the market basket products is to examine the cost elements, such as wage rates, transportation rates, price of packaging materials, and profits. But quarterly observations of these elements for each of the different product groups are not available.

A different approach is to use the pricing method of marketing agencies as a basis for estimating the spread. There are many studies concerning the behavior of marketing agencies in relation to their pricing methods. The most common pricing methods involve either a constant or percentage markup of prices over costs. If the marketing agencies use constant percentage markups, price flexibilities of the product at both retail and farm levels will be equal. This means that if demand for the product is elastic at the retail market, an increase in supply would increase gross farm income. If the spread is a fixed amount, prices will be more flexible at the farm level than at the retail level, and an increase in supply may decrease gross farm income even if the demand for the product is elastic at the retail level.

In a study of the nature of marketing margins, Dalrymple (2) points out that wholesalers appear to prefer the constant percentage markup, and retailers appear to favor the absolute margin. However, for most agricultural products, Waugh (7) reported that "many studies of this matter...suggest that the price spreads are neither constant percentages nor constant absolute amounts, but somewhere in between of the two." Following this observation, the spread is expressed as linear functions of both constant and percentage markups on retail and farm values. The two spread-value equations are:

$$(6) \qquad M_t = a_6+b_6P_{rt}+d_6D_2+e_6D_3+f_6D_4+\varepsilon_t$$

and

$$(7) \qquad M_t = a_7+b_7P_{ft}+d_7D_2+e_7D_3+f_7D_4+\varepsilon_t$$

If the retailer's markup is more important than the wholesaler's (as a percentage of the total market spread), a constant spread between retail and farm values is more likely. The estimated equation will have a negligible coefficient for either the retail or farm value. On the other hand, if the wholesaler's markup is more important, a percentage markup policy can be dominant. The estimated equation will have insignificant intercept.

Because the retail value of a product is equal to its farm value plus the spread, i.e., $P_{rt} = P_{ft}+M_t$, equation (6) can be transformed into a relationship between the farm and retail values.

$$(8) \qquad P_{ft} = -(a_6+d_6D_2+e_6D_3+f_6D_4)+(1-b_6)P_{rt}-\varepsilon_t$$

The coefficient $(1-b_6)$ represents the marginal impact on the farm value resulting from a unit change of the retail value of the products during the period examined.

RESULTS

Price-Quantity Equations

Retail and farm level price-quantity equations for meat, dairy, poultry and eggs, linear in both natural and logarithmic forms, were estimated by least squares. When the equation is expressed in logarithmic form, elasticity or flexibility is the same at every point on the curve and is equal to the slope of the curve. It is convenient, therefore, to compare the estimated parameters by way of the logarithmic functions in this study, (table 1). The linear relationships are presented in appendix table 1. The value in parentheses under a regression coefficient is the standard error of that coefficient. The t-test was a test of the significance of the regression coefficients.

Appraisal of the model: The coefficient of determination, (R^2), provides the goodness of fit measure of the estimated price-quantity line to the sample observations. Consumption, income, and seasonal factors explained 98 percent of the variations in retail meat prices and 97 percent at the farm level. For the dairy relationship, the R^2 is .94 at the retail and .93 at the farm level, but consumption and seasonal factors are not significant.

Table 1--Logarithmic price-quantity relationships for meat, dairy, poultry, and eggs, quarterly, 1965-75 1/

Product group	Dependent variable	Constant 2/	Coefficient 2/		Seasonal intercept 2/			R^2	Durbin-Watson statistic
			Consumption	Income	2nd qtr.	3rd qtr.	4th qtr.		
Meat	Retail price	6.1052*	-1.3387*	1.0146*	-0.0327*	0.0174	0.0283*	0.9816	1.0092
		(0.5444)	(0.1268)	(0.0233)	(0.0138)	(0.0136)	(0.0139)		
	Farm price	10.2305*	-2.3515*	1.1334*	-0.0355	0.0372	0.0215	0.9665	0.9452
		(0.8102)	(0.1887)	(0.0347)	(0.0206)	(0.0203)	(0.0207)		
Dairy	Retail price	1.9269	-0.1090	0.6868*	-0.0050	-0.0109	0.0004	0.9410	0.2850
		(2.2451)	(0.4626)	(0.0366)	(0.0192)	(0.0187)	(0.0185)		
	Farm price	2.7883	-0.4035	0.7940*	-0.0144	-0.0115	0.0072	0.9335	0.4411
		(2.8247)	(0.5820)	(0.0460)	(0.0242)	(0.0236)	(0.0233)		
Poultry	Retail price	5.7289*	-1.2446*	0.9551*	0.1289*	0.2745*	0.3753*	0.8474	0.9032
		(0.7739)	(0.2215)	(0.0726)	(0.0399)	(0.0536)	(0.0778)		
	Farm price	9.1586*	-2.4573*	1.3842*	0.2393*	0.5124*	0.7080*	0.8145	0.9089
		(1.1858)	(0.3394)	(0.1112)	(0.0611)	(0.0821)	(0.1193)		
Eggs	Retail price	16.2601*	-2.6004*	0.0966	-0.1949*	-0.1229*	0.0266	0.6986	0.4663
		(3.4240)	(0.6281)	(0.1334)	(0.0497)	(0.0496)	(0.0480)		
	Farm price	23.2197*	-3.9570*	-0.0492	-0.2839	-0.1371	0.0591	0.6152	0.4357
		(5.3253)	(0.9768)	(0.2075)	(0.0773)	(0.0771)	(0.0747)		

1/ Price, quantity, and income data are index numbers (1967=100).
2/ Figures in parentheses are the standard errors of the regression coefficients.
* Significantly different from zero at 5 percent (or less) probability level.

For poultry products at the retail level, the price-quantity relationship explained 84 percent of the variation, while at the farm level, 81 percent of the variation is explained by the model. Income is insignificant in the egg equations. The seasonal variables are only significant at the retail level. Overall, the equations explained 70 percent of the retail price variation and 62 percent of the farm price variation.

Forecasting: The 1976 quarterly retail price indices and retail values for the four product groups are listed in table 2.3/

Table 2--Projected versus reported retail price indices and retail values for meat, dairy, poultry and eggs, quarterly, 1976

Product group	Quarters					Projected versus reported	
	Reported	Projected					
	I	I	II	III	IV	I	Percent change
	Retail price indices (1967=100)						
Meat	188.31	186.58	194.25	194.00	193.35	-1.73	-0.9
Dairy	167.12	159.14	161.04	161.76	165.47	-7.98	-4.8
Poultry	162.54	161.49	166.59	176.69	171.60	-1.05	-0.7
Eggs	175.55	176.73	154.36	163.48	180.73	+1.18	+0.7
	Retail values						
Meat	601.85	596.33	620.84	620.04	617.97	-5.52	-0.9
Dairy	328.45	312.77	316.51	317.92	325.21	-15.68	-4.8
Poultry	74.93	74.45	76.80	81.45	79.11	-0.48	-0.6
Eggs	62.23	62.65	54.72	57.95	64.07	+0.42	+0.7

The projected and reported figures are compared for the first quarter of 1976. The forecasted retail price index of meat is 186.58, about 2 points or 1 percent less than the reported value. The projected dairy price index is 159.14, about 8 points or 5 percent lower. The projected price index for poultry for the first quarter of 1976 is 161.5, about 1 point or 1 percent lower than the reported figure. The projected egg price index is 176.7, which overestimated the reported value by 2 points or 1 percent.

Price-consumption flexibilities: Besides forecasting, the estimated relationships provide price flexibilities with respect to consumption and income for the different product groups. These flexibilities are represented

3/ Income and consumption data used in this projection were obtained from NEAD,ERS.

by the coefficients for consumption and income in table 1. Except for dairy products, which have insignificant coefficients at both the retail and farm level markets, all other price flexibilities with respect to consumption are significant. For red meat, the retail price flexibility is -1.3 and the farm price flexibility is -2.3. For the poultry group, it is -1.2 at the retail - 2.5 at the farm. For eggs, these retail and farm price flexibilities are -2.6 and -4.0, respectively.

The larger-than-unity price flexibilities obtained indicate that demand for these products is inelastic. Inelastic demand at the retail level implies that consumers will spend slightly more of their income on the farm product when supplies are small than they will when supplies are abundant. Inelastic demand at the farm level means that farmers receive a lower return when supplies are large than when supplies are small. Comparing the price flexibilities obtained for the three groups of farm products at the retail and farm level, the flexibilities are more elastic at the farm level than they are at the retail level. One reason for this situation may be because of the behavior of spreads. If spreads are relatively constant regardless of the quantity sold and consumers spend less as the supply increases, the deduction of relatively fixed unit costs for marketing causes a larger relative reduction in the returns to farmers.

Price-income flexibilities: Income coefficients or price flexibilities with respect to income in table 1 are about unitary for meat at both retail and farm levels of the market. Thus, as consumer incomes increase, meat prices tend to increase by the same proportion. For poultry products, the farm price increases more than proportionally, (about a 14-percent increase for a 10-percent increase in income). Dairy product prices respond less than proportionate to changes in income. A 10-percent increase in income induces a 7-percent change in retail value and about 8-percent change in the farm value of dairy products.

Since income is highly correlated with trend over time the trend variable is not used in the estimation of prices. To the extent that technology and taste effects are captured in the income coefficient because of the exclusion of the trend variable, interpretation of the income coefficient is not clear. The inflationary impact of income on the prices of meat and poultry prices may be partially attributable to the effects of technological progress and changes in tastes. Moreover, the less proportionate increase in dairy prices, as related to income, does not necessarily imply that dairy products are less prevalent in a consumer's diet than meat and poultry. There is a decided downward shift in milk consumption, especially since 1970, which is largely attributable to the change in the age-sex composition of the population. This is picked up by the income variable. An upward shift in meat consumption is similarly incorporated in the income coefficient.

Seasonal variation of prices: Prices of dairy products do not exhibit significant seasonal variations during the period examined. The meat price index tends to decrease by 0.3 points in the second quarter, and increase by same in the fourth quarter at the retail level. Poultry prices shifted progressively from spring through winter at larger increments for the farm than the retail level. The price of eggs shifts downward in the second and third quarters by 0.2 points in the retail market.

Comparison with other studies: Although there were no other studies for the same product groups available, studies by F. Waugh (7) and George and King (3) for individual products, such as beef, pork and milk, etc. may be used to make comparisons. The price flexibilities and inversed consumption and income elasticities from these studies, both with annual data of different time periods, together with quarterly estimates from this study, are listed in table 3. In general, the quarterly price flexibility with respect to consumption for the meat product group is smaller than the annual price flexibility for beef obtained by Waugh, George and King. The quarterly price flexibility for poultry and eggs from this study is comparable to the other studies listed here. For the dairy group, the quarterly price flexibility is smaller than any of the estimates for the individual dairy products obtained by George and King, and is larger than the estimate of fresh milk obtained by Waugh. As for the price flexibilities with respect to income, all of the quarterly estimates are smaller than those obtained for the individual products.

Table 3--Price flexibilities with respect to consumption and income for meat, dairy, poultry, and eggs

Products	Consumption			Income		
	Quarterly: 1965-75	Waugh 1/	George and King 2/	Quarterly: 1965-75	Waugh 1/	George and King 2/
Meat	-1.34			1.01		
Beef		-1.44	-1.55		1.29	3.45
Veal			-0.58			1.69
Pork			-2.42			7.49
Lamb and mutton			-0.38			1.75
Dairy	3/ -0.11			0.69		
Fresh milk		-0.07	-2.89		1.18	4.90
Evaporated milk			-3.13			4/
Cheese			-2.17			4.02
Ice cream			-1.89			3.02
Poultry	-1.24			0.96		
Chicken			-1.29			5.60
Turkey			-0.64			1.30
Eggs	-2.60		-3.14	3/0.10		3/

1/ Annual data, 1948-62, (7).
2/ Estimates are the inverses of consumption and income elasticities, annual data, 1964-68, (3).
3/ Not significantly different from zero at 5-percent probability level.
4/ Income elasticity of evaporated milk was set at zero (3).

In comparing these figures, one should bear in mind that (1) the inverse of a consumption or income elasticity is not exactly equal to its respective price flexibility (Houck, 4), (2) because greater varieties of food substitutes are available at the disaggregated level, the elasticities of individual products should be greater than those of product groups, and (3) different length-of-time periods may affect elasticities of a commodity differently (Pasour and Schrimper, 6).

Retail-Farm Value Equations

Three equations of the short-run market demand with different error term assumptions were estimated for the total market basket and each of the product groups. By using statistical criteria about the coefficient of determination and student t statistic, the best results for each group were chosen from the set of three equations (table 4). Equations selected for various product groups were as follows: the Koyck distributed lag for dairy, fresh vegetables, and miscellaneous products; the autoregressive least squares for fresh fruits; and the Koyck with autoregressive error for the remainder, including the market basket total.

In each of the reduced-form equations, the coefficients represent the impact-multipliers of a change in the farm, lagged farm, or retail value on the current retail value of a product. The lag statistic, λ , is a measure of the geometric distribution of influences of the past values. In a Koyck distributed lag equation, the coefficient of the lagged value is equal to the lag coefficient λ . In the autoregressive least squares or Koyck lag with autoregressive error equation, the coefficients (or impact-multipliers) of the lagged values are derived from the current farm value coefficient, b, the lag coefficient λ and the autocorrelation coefficient ρ. Before applying these equations to the task of forecasting, it seems worthwhile to examine these estimated statistics for the product groups.

Coefficient of the current farm value: Of the total and nine individual product groups, fresh vegetables, processed fruits and vegetables, poultry and eggs, miscellaneous products, have current farm value coefficients (b) larger than one. In other words, the impacts of changes in the farm values of these products on their retail values are more than proportionate. The largest coefficient obtained is 1.6 for fresh vegetables, indicating that when the farm value of fresh vegetables increases by $1, its retail value increases by $1.6. Processed fruits and vegetables, poultry and eggs, and miscellaneous products have coefficients ranging from 1.0 to 1.2.

For the rest of the products, retail values change less than proportionately with changes in farm values. The smallest and the only statistically insignificant coefficient is 0.24 for bakery and cereal products. Since these products go through long and varied stages of processing before reaching consumers, marketing costs obviously account for the bulk of the consumer dollar. The association between retail and farm value of this product group is expected to be small. Meat and dairy products go through less processing, so a larger proportion of the retail and farm values for these products move together. A $1 change in the farm value of meat induces a 70-cent change in the retail value; a $1 change in the farm value of dairy products induces a 90-cent change in the dairy retail value.

Table 4--Regression coefficients of the retail-farm value relationships for the total individual product groups of the market basket, 1965-75 1/

Product group	Equation number	Dependent variable	Constant 2/	Coefficient 2/				Seasonal intercept 2/			λ	ρ	R^2	Durbin-Watson statistic
				Farm value		Retail value		2nd quarter	3rd quarter	4th quarter				
				Current	Lagged	Lagged 1 qtr.	Lagged 2 qtrs.							
Meat	(5)	Retail value	10.3748	0.7003* (0.0441)	-0.2711*	0.9610*	-0.2222*	-7.1557* (2.5904)	-0.0847 (2.5057)	-5.4869* (2.7939)	0.5739* (0.0323)	0.3871* (0.1621)	0.9961	2.1467
Dairy	(4)	do.	9.4517	0.9053* (0.0555)	--	0.5320*	--	0.7754 (0.8786)	-0.2744 (0.8972)	0.9793 (0.8917)	0.5320* (0.0315)	--	0.9974	1.7317
Poultry and eggs	(5)	do.	4.8078	1.0874* (0.0321)	-0.9036*	0.9141*	-0.0691*	0.4719 (0.7001)	-0.6295 (0.6698)	1.0782 (0.6834)	0.0831* (0.0290)	0.8310* (0.0884)	0.9946	2.1271
Bakery and cereals	(5)	do.	-4.4039	0.2387 (0.2033)	-0.2530	1.4750*	-0.4398*	-0.6791 (2.5041)	-1.5653 (2.4911)	2.1607 (2.5694)	0.4148* (0.2136)	1.0000* (0.0561)	0.9854	2.3532
Fresh fruits	(3)	do.	-1.0138	0.6658* (0.1695)	-0.6658*	1.0000*	--	3.9934* (0.7062)	5.0124* (0.6624)	-4.5332* (0.7492)	--	1.0000* (0.0301)	0.9822	2.1082
Fresh vegetables	(4)	do.	5.2696	1.6290* (0.1433)	--	0.4123*	--	-0.0944 (1.3454)	-1.8303 (1.6087)	-1.8117 (1.5325)	0.4123* (0.0542)	--	0.9753	1.5719
Processed fruits and vegetables	(5)	do.	1.7895	1.0340* (0.2111)	-0.8432*	1.5456*	-0.5954*	-0.0433 (0.6489)	0.1613 (0.6492)	0.3331 (0.6501)	0.7300* (0.0810)	0.8155* (0.1704)	0.9963	1.9280
Fats and oils	(5)	do.	6.4222	0.6528* (0.0408)	0.3131*	0.2368*	0.3436*	-0.4720 (0.5776)	-1.0151 (0.5652)	0.1591 (0.6077)	0.7165* (0.0261)	-0.4796* (0.1722)	0.9941	1.8746
Miscellaneous	(4)	do.	9.2694	1.1798* (0.0664)	--	0.6488*	--	-0.3026 (0.4960)	0.2725 (0.5067)	-0.1591 (0.5070)	0.6488* (0.0272)	--	0.9949	1.9464
Total market basket	(5)	do.	24.4692	0.5817* (0.0535)	0.1614	1.0358	-0.2104	-11.5315* (5.5487)	-6.5480 (5.1795)	-20.3004* (5.4010)	0.7300* (0.0285)	0.2775 (0.1736)	0.9984	1.8243

1/ Figures in parentheses are the standard errors of the regression statistics.
2/ Lagged regression coefficients were incorporated from λ, ρ and coefficients of current farm values.
* Significantly different from zero at 5 percent (or less) probability level.

In between bakery cereal and products and animal products, there are fats and oils, and fresh fruits. The estimated coefficients of farm values for these products indicate that a $1 increase in the farm value of either of these products may induce about a 65-cent to 67-cent change in its respective retail value. Transportation cost and losses due to spoilage for fresh fruits have the same effects on distribution of the consumer dollar as the processing costs do for the other products. For the total market basket, the marginal response of the retail value to a change in the farm value is 58 percent.

If the association between the retail and the farm value is expressed as the ratio of relative change in retail value to relative change in farm value at the mean, the elasticity of price transmission is obtained. Table 5 lists the elasticities of price transmissions for the market basket and its product groups. None is larger than one. The poultry and egg group has the highest price transmission, 0.62, while the bakery and cereal group has the lowest, 0.04. Meat, dairy products and fresh vegetables have elasticities of price transmission in the higher range, between 0.4 and 0.54. For fresh fruits, processed fruits and vegetables, fats and oils, and miscellaneous products, the price transmission is about 0.2. The average figure for the total market basket is 0.24.

The fact that the elasticity of price transmission of a product is less than one may imply that as the producer's price increases, other factors such as prices of inputs used by the processors rise less than proportionately. Therefore, the relative change in consumer price will not exceed the relative change in producer price.

Table 5--Elasticities of price transmission, adjustment coefficients, and periods of adjustment of retail values for the different product groups and the total market basket

Product groups	Elasticities of price transmission	Retail value	
		Adjustment coefficient ($1-\lambda$)	Period of adjustment (quarters)
Meat	0.4059	0.4261	5.4
Dairy	0.4311	0.4680	4.7
Poultry and eggs	0.6246	0.9169	1.2
Bakery and cereals	0.0442	0.5852	3.4
Fresh fruits	0.2070	---	---
Fresh vegetables	0.5415	0.5877	3.4
Processed fruits and vegetables	0.2044	0.2700	9.5
Fats and oils	0.2138	0.2835	9.0
Miscellaneous	0.2092	0.3512	6.9
Total market basket	0.2375	0.2700	9.5

The lag coefficient: The lag coefficient (λ), would be present only in equations with distributed lag assumptions. The fresh fruit equation, which has only an autoregressive error term assumption, does not have a lag coefficient. For the other groups, the lag coefficients range from a low of 0.08 for poultry and egg products to a high of 0.7 for processed fruits and vegetables, fats and oils, and the total market basket. In between these estimates, the values of the coefficients are 0.6 for miscellaneous products, 0.5 for meat and dairy products, and 0.4 for fresh vegetables, bakery and cereal products.

Since λ has limit values of zero and one, a value of λ close to its upper limit implies a longer period of adjustment for the retail value of a product to attain equilibrium after a change in its farm value. The rate of change of the retail value during one period may be represented by a speed adjustment coefficient $(1-\lambda)$. The larger $(1-\lambda)$, the faster the retail value reaches its equilibrium. The largest value of the adjustment coefficient is one, which means that there is no lagged influence of the farm value, and the retail value always reaches its equilibrium within one time period. If the adjustment coefficient has a value close to zero, the equilibrium may not be attained within a finite time period. In the case of the total market basket, a change in the farm value will induce, during the first quarter, about 30 percent of the total change necessary to attain its equilibrium level. The total length of time required for the retail value to adjust to within 95 percent of the new equilibrium value is nearly 10 quarters. At the other end of the scale, the small lag coefficient obtained for poultry and eggs indicates that 90 percent of the full impact of a change in the farm value would be felt at the retail level within one quarter. Other speed adjustment coefficients, and the adjustment periods as estimated from the lag coefficients are listed in table 5.

The autocorrelation coefficient: The first order autocorrelation coefficient (ρ) has limit values of minus and plus one. Three product groups, dairy products, fresh vegetables, and miscellaneous products, were estimated with the simple distributed lag model. There are no statistics of autocorrelation coefficients for these equations. For the other product groups, the estimated autocorrelation coefficients range from -0.5 to 1. A significant autocorrelation coefficient implies that residuals of the estimated equation are not pairwise independent. For example, each residual term of the fats and oils equation is equal to a random number minus 50 percent of its preceding residual term. The residual term of fresh fruits equation is equal to a random number plus its preceding residual term. After transforming the original observations by the estimated autocorrelation coefficient, the reduced-form equation of a product may have both current and lagged farm value, lagged retail value to explain its retail value. In the case of fresh fruits, the reduced-form equation has the same coefficient, 0.7, with opposite signs, for the current and lagged farm values. The coefficient of the lagged retail value is equal to one.

Seasonal fluctuations: With the exception of meat and fresh fruit, retail values of most of the products included in the market basket do not demonstrate significant seasonal fluctuations. The retail meat value increased about $10 in the first quarter and decreased about $7 in the second quarter and another $5 in the fourth quarter for the years included in the

analysis (1965-75). The retail value of fresh fruits increased by $4 to $5 in the second and third quarters, and decreased about $4 in the fourth quarter. For the market basket as a whole, the retail value increased about $24 in the first quarter, decreased by $11 in the second quarter, and declined an additional $6 and $20 in the third and fourth quarters, respectively.

Forecasting: Estimated and reported retail values over the period 1965-75 are shown in figures 2 and 3. The closeness of the reported and estimated values is indicated by the coefficient of determination, R^2, of a regression. The R^2s are close to .99 for all the regressions estimated.

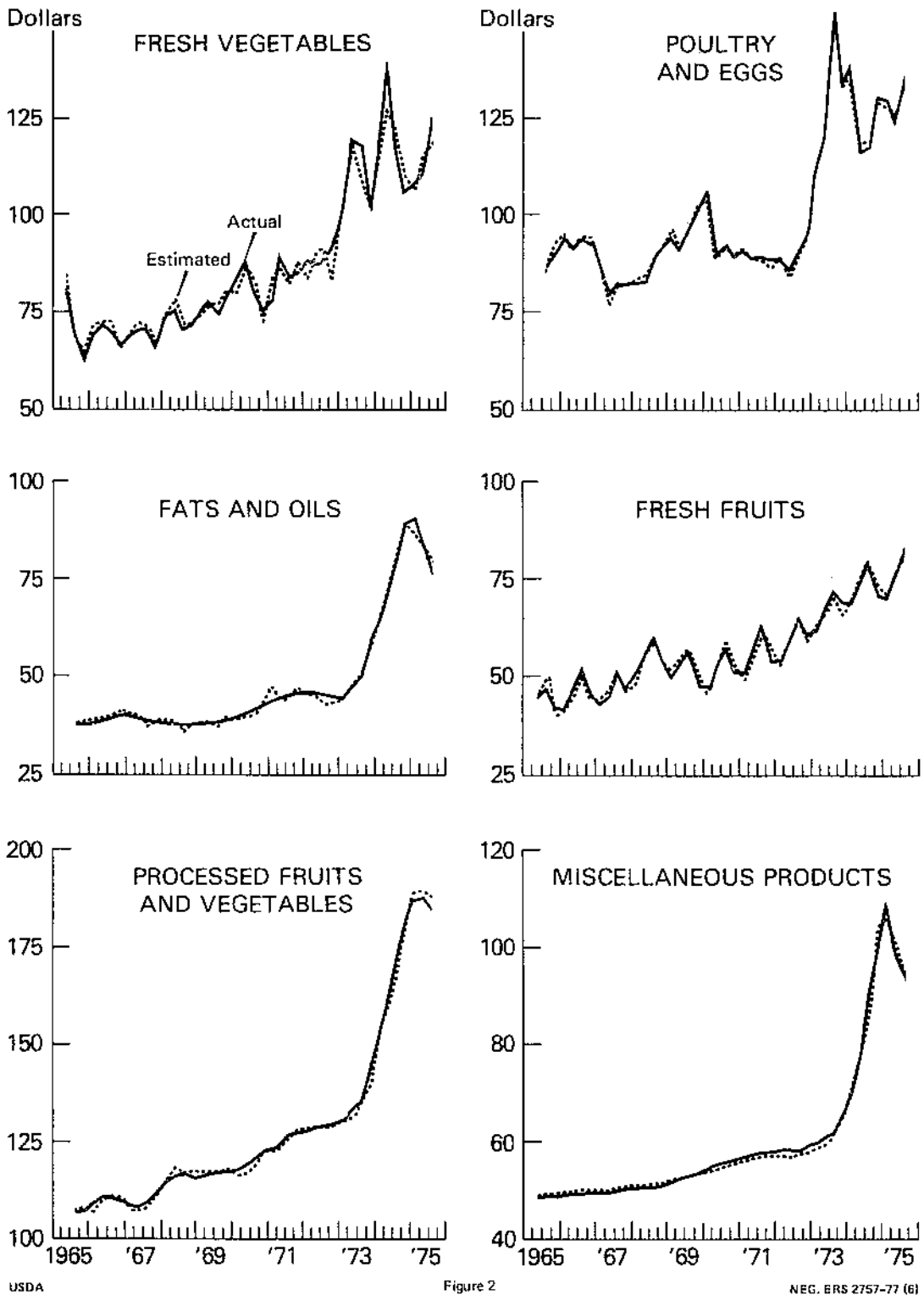
The goodness of fit is a necessary but not sufficient criterion for a model to predict accurately. In order for a model to be valid for forecasting purpose, the structure of the system to which the model is applied should remain unchanged. Another prerequisite for a forecasting model to be useful is that the values of the exogenous variables used in the process of prediction should not be erroneous.

Based on forecasts of farm values made in late 1975 by the Economic Research Service, the 1976 quarterly retail values were estimated and are listed in table 6. Also shown are the forecasted and reported figures for the fourth quarter of 1975. For this quarter, the forecasted retail value of fresh fruits is 12 percent or $8 higher than that reported. Equations for miscellaneous products and fresh vegetables underestimated their retail values by 4 and 3 percent, respectively, or by $4 and $3 in monetary terms. The forecasted retail value of poultry and eggs is 2 percent or $2 higher than reported. For the rest of the product groups, discrepancies between the forecasted and reported values are about 1 percent or less. For the total market basket, however, regression gives a somewhat different estimate than that obtained by totaling the estimates for individual product groups. The difference between forecasted and actual values for the fourth quarter of 1975 is $10 or 0.5 percent for the market basket total and $2, or 0.1 percent, for the sum of the product groups.

Meat accounts for the highest retail value in the market basket. The 1976 fourth quarter retail value forecast for this group is $616, about $30 or 4.7 percent less than the first quarter forecasted value. The second highest retail value in the market basket is dairy products, the forecasted fourth quarter retail value is $308, about $10 or 3 percent less than the first quarter value. The retail value of bakery and cereal products ranks third in the total value of the market basket. The forecasted fourth quarter figure for this group is $283, a decrease from the first quarter figure of about $16, or more than 5 percent.

Forecasts of the total market basket retail values for the four quarters of 1976, by regression, are $1,933, $1,948, $1,961 and 1,940. Totaling the individual values of the product groups results in quarterly retail values of $1,923, $1,919, $1,912 and $1,850, respectively.

ACTUAL AND ESTIMATED RETAIL VALUES, 1965-75

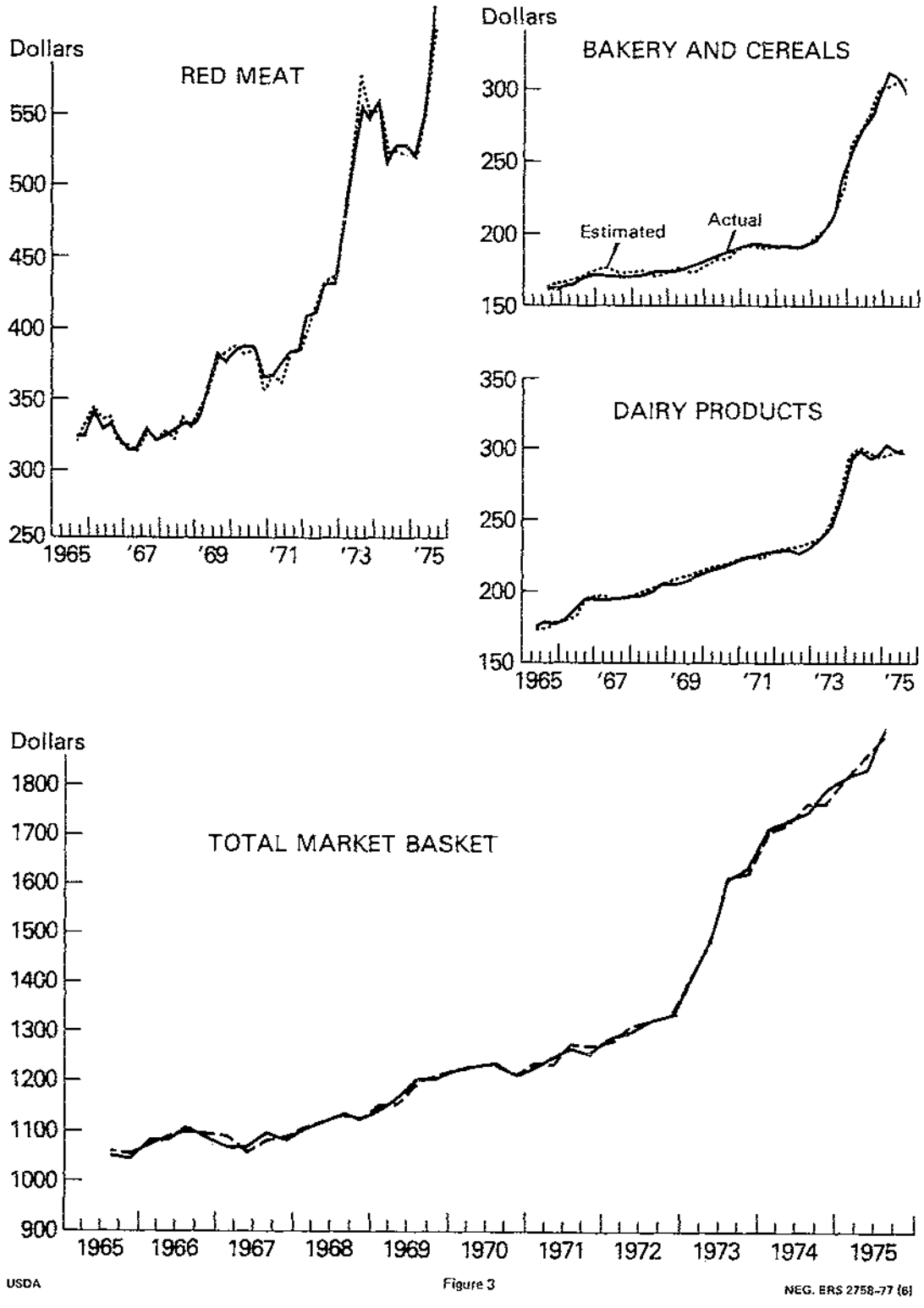


USDA

Figure 2

NEG. ERS 2757-77 (6)

ACTUAL AND ESTIMATED RETAIL VALUES, 1965-75



USDA

Figure 3

NEG. ERS 2758-77 (6)

Table 6--Projected versus reported retail values of total and individual groups of food products included in the market basket, quarterly, 1975 and 1976

Product group	Reported 1975 4th quarter	Projected 1975 4th quarter	Projected 1976 1st quarter	Projected 1976 2nd quarter	Projected 1976 3rd quarter	Projected 1976 4th quarter	Projected minus reported 1975 4th quarter (Dollars)	Projected minus reported 1975 4th quarter (Percent)
	Dollars							Percent
Meat	636	634	646	654	644	616	-2	-0.3
Dairy	315	317	318	308	305	308	+2	+0.6
Poultry and eggs	136	138	133	124	134	123	+2	+1.5
Bakery and cereals	299	301	299	295	288	283	+2	+0.7
Fresh fruits	67	75	67	73	79	72	+8	+11.9
Fresh vegetables	115	112	117	126	128	114	-3	-2.6
Processed fruits and vegetables	186	184	184	184	184	183	-2	-1.1
Fats and oils	76	75	72	70	67	66	-1	-1.3
Miscellaneous	92	88	88	84	85	86	-4	-4.3
Total market basket	1,922	1,924	1,923	1,919	1,912	1,850	+2	+0.1
Total market basket by regression		1,932	1,933	1,948	1,961	1,940	+10	+0.5

Spread-Value Equations

The purpose of this section is to examine the relationships between the spreads and values at the different levels of the marketing system for the different product groups and the total market basket. The average change in the farm value as related to the change in the retail value is also examined. The relationship between the farm and the retail value gives an indication of the average farmer's share.

In general, if the spread is related to the value of the product at either the retail or farm level by a small percentage (i.e., the coefficient of the retail or farm value in the spread equation is small), the change in the farm value with respect to a change in the consumer dollar would be large. If the spread is related to the retail or farm value by a large percentage, the change in the farm value with respect to a change in retail value would be small.

Table 7 presents the estimates of the different spread relations for the market basket data. The table shows that for the three product groups, meat, fresh fruits, and fresh vegetable the intercept values in the spread-retail value relations are not significantly different from zero. For these products therefore, the spread may be fixed proportion of retail value. For the other products, the linear function has significant intercept and slope values at both retail and farm levels of the market.

Appraisal of the model: Overall, the regressions of spreads on the retail values give better R^2s than the relationships between spreads and farm values for the different product groups tested. The spread variation seems more closely related to the changes in retail value than to the changes in the payment received by farmers. The R^2s for the spread-retail value equations range from a high of 0.99 for processed fruits and vegetables to a low of 0.72 for poultry and eggs. But the R^2s for the spread-farm value equations have a high of 0.89 for dairy products and a low of 0.56 for poultry and eggs.

Spreads and food values at different levels of the market: The coefficient of the retail or farm value of a product indicates how much change in a spread results from a $1 change in retail or farm value. In general, spreads for crop products fluctuate more than for animal products when a change in market value occurs. In addition, larger farm value than retail value is required to cause the same amount of spread change. For example, a $1 increase in the retail value of a meat product would increase the spread of this product by 37 cents, whereas the same change would cause a 75-cent increase in the spread of processed fruits and vegetables. At the farm level, a $1 change in the farm value of meat products would result in a 49-cent change in its spread; the same amount of farm value change would result in $2.80 change in the spread of processed fruits and vegetables. The range of the association between spread and retail value is from 20 cents to $2.50 for animal products; it is from 60 cents to 80 cents for crop products. The range of the association between spread and farm value, on the other hand, is from 20 cents to 80 cents for animal products, and from $1.60 to $2.80 for crop products. Poultry and eggs show the smallest association between spread and value changes at both retail and farm level for the various product groups. Processed fruits and vegetables show the largest difference between their spread changes through

Table 7--Estimates of the spreads for total and individual product groups of the market basket, quarterly, 1965-75

Product group	Dependent variable	Constant 1/	Regression coefficient 1/		Seasonal intercept 1/			R^2	Durbin-Watson statistic
			Retail value	Farm value	2nd qtr.	3rd qtr.	4th qtr.		
Meat	spread	21.6416	0.3680*		-3.9821	-6.0074	6.5856	0.8430	0.9598
	do.	(11.1869)	(0.0263)		(6.0168)	(6.1659)	(6.1639)		
	do.	55.8942*		0.4869*	-5.6136	-8.5691	9.8326	0.6306	0.8510
		(15.4849)		(0.0619)	(9.2375)	(9.4741)	(9.4623)		
Dairy	do.	15.0607*	0.4555*		1.2217	0.3444	-0.3068	0.9669	0.4574
	"	(3.2570)	(0.0139)		(1.3958)	(1.4310)	(1.4301)		
		32.2690*		0.7934*	2.2395	0.5248	-0.5254	0.8909	0.4415
		(5.1953)		(0.0458)	(2.5327)	(2.5978)	(2.5956)		
Poultry and eggs	"	20.9067*	0.2094*		1.1291	-0.7746	0.7369	0.7186	0.4631
		(2.3009)	(0.0218)		(1.0706)	(1.0919)	(1.0918)		
	"	28.4480*		0.2303*	1.2551	-0.9904	0.8741	0.5621	0.4053
		(2.1789)		(0.0339)	(1.3396)	(1.3617)	(1.3628)		
Bakery and cereal	"	23.6659*	0.6924*		2.4591	-0.0043	-0.5609	0.9648	0.6701
		(4.6605)	(0.0219)		(2.4774)	(2.5416)	(2.5379)		
	"	95.9219*		1.7387*	7.1635	-0.9987	-1.6778	0.6868	0.6039
		(8.9135)		(0.1947)	(7.3966)	(7.5816)	(7.5727)		
Fresh fruits	"	-0.2496	0.6919*		-0.4129	0.4537	0.3246	0.9661	0.7164
		(1.2399)	(0.0223)		(0.6163)	(0.6461)	(0.6233)		
	"	7.7965		1.7176*	-0.3590	2.4996	1.1434	0.7013	0.5832
		(3.4542)		(0.1969)	(1.8403)	(1.8874)	(1.8484)		
Fresh vegetables	"	1.6237	0.6392*		-0.2466	1.9324*	1.5112*	0.9775	1.7645
	"	(1.4733)	(0.0162)		(0.7874)	(0.7981)	(0.8013)		
		10.0453*		1.5787*	-0.1394	4.9501*	3.5877	0.8395	1.571
		(3.6462)		(0.1159)	(2.1076)	(2.1474)	(2.1638)		
Processed fruits and vegetables	"	5.8342*	0.7541*		0.2375	0.3388	0.2030	0.9918	0.[illegible]44
		(1.5089)	(0.0113)		(0.6744)	(0.6915)	(0.6908)		
	"	31.1988*		2.7699*	1.0009	1.0922	0.7510	0.8738	0.3631
		(4.7604)		(0.1735)	(2.6376)	(2.7081)	(2.7030)		
Fats and oils	"	9.6606*	0.4695*		0.3298	-1.0847	-0.1023	0.8753	0.8466
		(1.6122)	(0.0295)		(1.1684)	(1.1988	(1.1972)		
	"	21.1599*		0.6921*	0.6157	-2.0524	-0.1504	0.6023	0.7818
		(2.0582)		(0.0940)	(2.0867)	(2.1382)	(2.1383)		
Miscellaneous	"	10.5591*	0.6443*		0.4052	0.0436	-0.4225	0.9719	0.7489
		(1.1933)	(0.0181)		(0.7246)	(0.7436)	(0.7426)		
	"	32.2972*		1.5663*	1.0565	-0.0790	-1.1117	0.7971	0.6860
		(1.9556)		(0.1304)	(1.9469)	(1.9974)	(1.9949)		
Total market basket	"	94.2026*	0.5177*		4.2567	-5.6735	7.6210	0.9556	0.6934
		(25.1433)	(0.0184)		(12.3650)	(12.6657)	(12.6655)		
	"	250.7743*		0.9678*	9.3494	-11.4298	14.8120	0.8190	0.6496
		(43.1089)		(0.0750)	(24.9695)	(25.5844)	(25.5930)		

1/ Figures in parentheses are the standard errors of the regression coefficients.
* Significantly different from zero at 5 percent (or less) probability level.

retail versus farm value changes. The spread of the fats and oils group, which includes products from both animals and crops, has a coefficient between those for animal and crop products.

Impact of the retail value on the farm value: The returns to farmers from retail level for the different product groups, as transformed from the spread-retail value relations, are listed in table 8. As can be expected, the returns from the consumer dollar to the farmer are smaller for crop products than for animal products. The poultry and eggs group incurs the largest percentage of retail value that can be returned to the farmer. From 1965 to 1975, a $1 increase in the retail value of this product group generally resulted in a 79-cent return to the farmer. The fruit and vegetable group had the smallest returns to the farmer, a $1 increase in the retail value generally resulted in a 25-cent return to the farmer.

The fact that an increase in the retail value of animal products is associated with larger changes in the farm value than for other foods may reflect the higher cost for the animal products. However, it is also true that fewer services are needed for the marketing of animal products than for processed foods. In general, the influence of a change in the retail value on the farm value decreases as the number of intermediate marketing stages increases.

Seasonal fluctuation: Aside from fresh vegetables, none of the spreads demonstrate significant seasonal variations. The spread for fresh vegetables is about $2 higher in the third and fourth quarters when it is specified as a function of retail value (table 7).

Application: one of the purposes of this section was to see if the estimated spreads could be incorporated with known farm values to determine retail values for product groups in the market basket. Since spreads are better explained by values at retail level than at farm level, these equations are not used to forecast spreads and, indirectly, the retail values. However, applications of the findings related to the spread-retail value function are obvious. Given a target value at the retail level, the price spread can be estimated and in turn deducted from retail value to obtain the return for the food product at the farm. Also, the fact that spreads are closely related to retail values of food products provides grounds for making further hypotheses about interdependencies between spreads and retail prices. A simultaneous system of relationships involving these variables might be well worth examining.

Table 8--Relationship between farm and retail prices for the total and individual product groups of the market basket, quarterly, 1965-75

Product group	Dependent variable	Constant 1/	Coefficient of retail value 1/	Seasonal concept 1/			R^2	Durbin-Watson statistic
				2nd quarter	3rd quarter	4th quarter		
Meat	Farm value	-21.6416	0.6320*	3.9821	6.0074	-6.5856	0.9404	0.9598
		(11.1869)	(0.0263)	(6.0168)	(6.1659)	(6.1639)		
Dairy	do.	-15.0607*	0.5445*	-1.2217	-0.3444	0.3068	0.9765	0.4574
		(3.2570)	(0.0139)	(1.3958)	(1.4310)	(1.4301)		
Poultry and eggs	do.	-20.9067*	0.7906*	-1.1291	0.7746	-0.7369	0.9732	0.4631
		(2.3009)	(0.0218)	(1.0706)	(1.0919)	(1.0918)		
Bakery and cereals	do.	-23.6659*	0.3076*	-2.4591	0.0043	0.5609	0.8433	0.6701
		(4.6605)	(0.0219)	(2.4774)	(2.5416)	(2.5379)		
Fresh fruits	do.	0.2496	0.3081*	0.4129	-0.4537	-0.3246	0.8488	0.7164
		(1.2399)	(0.0223)	(0.6163)	(0.6461)	(0.6233)		
Fresh vegetables	do.	-1.6237	0.3608*	0.2466]	-1.9324*	-1.5112	0.9381	1.7645
		(1.4733)	(0.0162)	(0.7874]	(0.7981)	(0.8013)		
Processed fruits and vegetables	do.	-5.8418*	0.2460*	-0.2349	-0.3413	-0.2057	0.9278	0.3954
		(1.5076)	(0.0113)	(0.6738]	(0.6908)	(0.6902)		
Fats and oils	do.	-9.6606*	0.5305*	-0.3298	1.0847	0.1023	0.8976	0.8466
		(1.6122)	(0.0295)	(1.1684]	(1.1988)	(1.1972]		
Miscellaneous	do.	-10.5591*	0.3557*	-0.4052	-0.0436	0.4225	0.9133	0.7489
		(1.1933)	(0.0181)	(0.7246)	(0.7436)	(0.7426)		
Total market basket	do.	-94.2024*	0.4823*	-4.2567	5.6725	-7.6210	0.9491	0.6934
		(25.1434)	(0.0184)	(12.3651)	(12.6657)	(12.6655)		

1/ Figures in parentheses are the standard errors of the regression coefficients.
* Significantly different from zero at 5 percent (or less) probability level.

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Appendix table 1--Price-quantity relationships for meat, dairy, poultry, and eggs, quarterly, 1965-75 1/

Product	Dependent variable	Constant 2/	Coefficient 2/		Seasonal intercept 2/			R^2	Durbin-Watson statistic	Price flexibilities with respect to:	
			Consumption	Income	2nd quarter	3rd quarter	4th quarter			Consumption	Income
Meat	Retail price	160.257* (17.2916)	-1.6264* (0.1796)	1.0273* (0.0254)	-4.3885* (2.0274)	2.5102 (2.0011)	3.7233 (2.0421)	0.9783	0.9918	-1.2971	1.0332
	Farm price	290.958* (27.1458)	-3.0885* (0.2820)	1.1893* (0.0398)	-5.1499 (3.1827)	6.0465 (3.1416)	3.2929 (3.2059)	0.9599	0.8850	-2.3930	1.1622
Dairy	Retail price	54.1861 (55.5463)	-0.1984 (0.5311)	0.6386* (0.0326)	-0.6037 (2.0326)	-1.5297 (2.2729)	-0.0905 (2.2497)	0.9411	0.3533	-0.1723	0.7077
	Farm price	54.7967 (76.5693)	-0.3315 (0.7321)	0.7636* (0.0449)	-1.9789 (3.2083)	-1.9389 (3.1331)	0.9668 (3.1012)	0.9242	0.5151	-0.2803	0.8241
Poultry	Retail price	132.654* (20.9959)	-1.4780* (0.2919)	0.9164* (0.0694)	13.5601* (5.1686)	32.4168* (6.9078)	46.0818* (10.5559)	0.8446	1.0250	-1.2773	0.9782
	Farm price	224.816* (35.0039)	-3.1995* (0.4866)	1.4632* (0.1158)	28.2427* (8.6169)	67.3743* (10.5165)	96.8972* (17.5986)	0.8194	1.0935	-2.5731	1.4534
Eggs	Retail price	486.164* (114.564)	-3.7975* (1.0094)	0.0801 (0.1532)	-26.0965* (6.5923)	-17.1885* (6.5650)	3.1508 (6.3035)	0.7048	0.5351	-2.8888	0.0820
	Farm price	754.054* (188.068)	-6.2652* (1.6570)	-0.0722 (0.2515)	-40.7849* (10.8218)	-21.5424 (10.7771)	7.8175 (10.3477)	0.6341	0.4957	-4.4120	-0.0684

1/ Price, quantity, and income data are index numbers (1967=100).
2/ Figures in parentheses are the standard errors of the regression coefficients.
* Significantly different from zero at 5 percent (or less) probability level.

Appendix table 2--Indices of per capita civilian consumption of livestock products, disposable income, quarterly, 1965-75

Year and quarter	Per capita consumption				Per capita disposable income
	Meat	Dairy	Poultry	Eggs	
			1967=100		
1965 I	95.50	104.70	70.50	97.60	85.847
II	91.70	103.20	81.80	95.70	87.343
III	93.40	104.00	95.00	95.70	89.862
IV	95.20	103.40	109.40	98.60	91.614
1966 I	92.50	104.40	75.60	97.40	92.964
II	94.60	103.20	87.90	94.50	93.840
III	97.00	101.20	102.10	95.50	95.446
IV	100.10	99.70	117.00	100.80	96.760
1967 I	100.50	100.40	80.80	100.10	98.074
II	98.60	102.80	94.00	97.20	99.279
III	100.00	99.10	104.90	99.10	100.63
IV	100.70	97.70	120.10	103.40	102.01
1968 I	102.20	98.40	84.50	102.50	104.42
II	99.70	104.20	91.40	97.60	106.76
III	103.10	101.70	102.60	96.60	107.58
IV	105.90	100.00	116.80	99.60	108.98
1969 I	102.90	98.70	85.20	99.40	110.01
II	99.50	102.20	97.30	97.00	112.12
III	102.70	100.10	106.90	96.90	115.04
IV	103.70	99.20	123.50	99.10	116.79
1970 I	101.50	98.90	91.80	98.90	118.55
II	100.80	99.40	102.10	96.50	121.87
III	104.80	99.70	113.20	97.20	123.84
IV	109.70	98.60	124.50	101.00	124.39
1971 I	106.20	99.00	92.80	98.20	128.04
II	106.10	99.30	100.70	96.40	130.63
III	109.00	99.50	113.00	95.20	131.69
IV	107.60	98.80	127.90	98.40	133.29
1972 I	105.40	99.30	98.00	98.70	135.85
II	104.80	100.00	108.40	93.30	137.67
III	103.70	99.70	115.70	92.90	140.74
IV	107.50	99.70	131.70	94.30	145.81
1973 I	100.90	99.90	95.60	91.60	150.70
II	95.30	100.00	102.50	91.00	154.83
III	93.30	99.60	110.60	88.20	158.40
IV	102.20	99.50	127.60	91.30	162.53
1974 I	101.60	98.00	99.10	89.90	164.72
II	104.80	97.50	108.90	87.20	166.93
III	104.30	97.70	110.30	86.10	171.43
IV	106.50	97.20	121.00	89.10	174.43
1975 I	104.20	98.30	91.20	86.60	175.49
II	96.00	98.00	101.80	83.70	185.05

Appendix table 3--Retail and farm price indices of meat, dairy, poultry, and eggs, quarterly, 1965-75

Year and quarter		Meat		Dairy		Poultry		Eggs	
		Retail	Farm	Retail	Farm	Retail	Farm	Retail	Farm
		1967=100							
1965	I	88.60	86.49	90.85	85.86	100.1	112.3	99.94	98.18
	II	93.13	100.2	89.96	82.91	102.1	116.0	99.37	98.52
	III	101.0	106.8	90.34	85.71	105.0	113.6	105.5	112.1
	IV	101.6	108.0	91.04	89.02	101.0	109.8	120.5	134.7
1966	I	106.9	116.2	92.46	91.47	109.0	124.2	122.8	139.0
	II	103.1	106.4	94.22	91.62	110.7	121.2	111.6	119.0
	III	104.2	108.2	98.06	100.4	110.0	118.2	120.0	136.4
	IV	100.4	96.52	100.4	102.2	101.8	103.0	127.5	145.8
1967	I	98.05	95.76	99.71	99.69	100.4	107.6	109.9	117.5
	II	98.37	101.2	99.54	99.04	100.0	98.36	93.28	88.21
	III	102.8	106.2	99.94	100.0	101.7	101.7	98.43	99.09
	IV	100.7	96.73	100.8	101.1	97.74	92.19	98.44	94.98
1968	I	101.2	101.8	101.0	102.1	102.0	104.5	98.02	94.7
	II	102.0	103.4	102.2	103.5	104.0	108.6	95.99	95.79
	III	104.4	107.3	103.4	104.6	105.5	111.9	111.6	121.4
	IV	103.8	102.9	104.3	105.6	102.8	101.8	124.1	134.7
1969	I	105.5	108.3	104.6	107.1	104.3	108.9	129.2	143.1
	II	112.7	123.9	105.2	108.4	108.4	114.4	112.3	118.2
	III	119.6	124.7	106.4	109.6	115.3	122.8	121.4	138.2
	IV	117.7	119.1	107.9	112.2	110.9	109.9	141.5	168.9
1970	I	120.7	125.7	109.9	114.2	111.2	112.4	152.8	173.3
	II	120.8	121.2	110.8	112.8	108.8	102.3	110.1	107.3
	III	120.7	118.7	111.7	113.3	107.0	99.29	120.3	129.6
	IV	114.7	100.0	112.8	115.4	104.6	93.87	116.7	119.4
1971	I	115.0	110.1	113.6	116.9	106.2	105.3	115.4	113.8
	II	117.1	112.0	114.5	116.2	108.8	106.8	104.5	100.3
	III	119.7	117.3	115.3	115.6	111.9	111.7	105.3	101.6
	IV	120.3	119.7	115.4	116.2	107.8	95.50	106.4	101.9
1972	I	128.5	131.2	116.1	118.4	109.7	107.4	105.0	98.23
	II	129.4	134.3	116.8	118.6	108.3	103.5	99.29	86.82
	III	135.3	141.5	115.8	118.6	110.9	113.5	106.1	105.9
	IV	135.4	138.8	116.9	120.2	109.9	109.1	117.9	123.2
1973	I	149.5	167.9	119.3	123.7	129.9	149.9	141.7	159.6
	II	158.9	178.1	121.9	125.6	152.3	178.4	140.4	158.7
	III	175.1	210.6	125.2	136.4	193.1	253.7	177.3	220.6
	IV	171.3	177.5	140.3	157.5	150.3	166.1	176.6	210.6
1974	I	175.2	180.1	148.7	166.0	156.7	175.7	187.3	223.5
	II	161.2	151.7	153.9	165.2	141.8	153.9	141.2	153.0
	III	164.9	168.6	149.4	152.3	142.2	165.5	144.7	165.6
	IV	165.1	162.4	150.9	154.1	151.9	179.0	168.8	195.7
1975	I	162.7	157.6	153.1	154.8	153.5	173.4	164.5	185.2
	II	172.6	192.5	151.4	154.9	153.2	182.8	145.1	153.1

Appendix table 4--Retail value for the market basket food product groups, quarterly, 1965-75

Year and quarter	Meat	Dairy	Poultry and eggs	Bakery and cereals	Fresh fruits	Fresh vegetables	Processed fruit and vegetables	Fats and oils	Miscellaneous products	Market basket total
					Dollars					
1965 I	283.20	178.57	81.57	161.61	40.46	69.70	107.13	36.91	48.60	1007.74
II	297.66	176.82	82.34	161.41	44.29	81.06	106.21	37.53	48.48	1035.82
III	323.05	177.57	85.84	161.17	46.65	69.18	106.10	37.39	48.61	1055.56
IV	325.00	178.94	89.33	161.34	40.95	61.83	106.17	37.25	48.65	1049.47
1966 I	341.91	181.73	93.83	163.70	40.41	68.86	108.49	37.65	49.12	1085.71
II	329.68	185.18	90.63	164.98	46.27	71.04	110.09	38.54	49.37	1085.76
III	333.24	192.74	93.27	168.63	51.31	69.39	109.87	38.85	49.34	1106.64
IV	321.08	197.49	92.14	171.54	45.34	65.97	108.99	39.77	49.55	1091.86
1967 I	313.39	195.97	85.26	171.02	42.13	67.66	108.21	39.46	49.59	1072.68
II	314.42	195.64	79.18	170.87	44.59	69.93	107.30	38.82	49.82	1070.58
III	328.70	196.44	81.80	170.44	50.53	70.76	108.79	38.49	50.02	1095.97
IV	321.93	198.12	79.96	170.59	46.77	65.73	111.61	38.33	50.28	1083.31
1968 I	323.69	198.64	81.83	170.74	50.66	73.43	114.33	38.15	50.36	1101.83
II	326.27	200.94	82.07	170.89	55.15	75.72	115.81	37.98	50.58	1115.41
III	333.75	203.23	88.36	172.01	59.46	70.24	116.33	37.76	50.70	1131.80
IV	331.86	205.11	91.55	172.95	52.50	70.89	115.73	37.76	51.09	1129.42
1969 I	337.35	205.72	94.09	173.67	49.90	74.47	115.66	37.84	51.66	1140.35
II	360.30	206.85	90.03	175.17	53.15	77.12	116.27	37.91	52.37	1169.18
III	382.41	209.31	96.46	176.59	56.34	74.37	116.69	37.85	52.75	1202.80
IV	376.40	201.23	101.64	179.00	47.09	78.67	116.64	38.25	53.65	1203.58
1970 I	385.99	216.08	105.47	182.17	46.95	83.16	117.11	39.04	54.69	1230.67
II	386.09	217.85	89.20	184.41	51.24	87.56	118.37	40.55	55.41	1230.69
III	386.08	219.55	91.98	186.69	57.52	80.02	119.97	41.38	55.95	1239.13
IV	366.70	221.87	89.65	189.17	50.38	74.94	121.49	42.38	56.67	1213.25
1971 I	367.60	223.27	99.89	191.36	50.17	77.71	122.81	43.65	56.98	1223.44
II	374.43	225.08	87.26	193.35	56.34	88.45	124.31	44.41	57.39	1251.08
III	382.76	226.72	88.98	193.85	52.50	82.95	126.68	45.03	57.80	1267.27
IV	384.75	226.90	87.47	192.12	53.71	84.71	126.92	45.61	57.91	1260.10
1972 I	410.94	228.21	87.85	192.06	53.50	87.69	127.35	45.64	58.12	1291.36
II	413.75	229.65	85.17	192.80	57.51	86.74	127.94	45.58	58.71	1297.85
III	432.55	227.70	88.78	191.30	63.99	88.07	127.60	44.82	58.61	1323.43
IV	432.91	229.76	92.48	192.12	60.27	90.20	128.99	44.79	59.11	1330.63
1973 I	477.90	234.15	110.13	195.73	60.62	100.96	130.25	44.55	59.53	1413.83
II	507.99	239.60	120.05	203.51	66.58	118.95	133.16	46.58	60.63	1497.05
III	559.87	246.09	151.90	211.46	71.55	117.18	134.81	49.61	61.21	1603.67
IV	547.65	275.94	131.94	243.40	68.70	100.58	142.66	59.35	64.43	1634.65
1974 I	560.13	292.30	138.66	259.40	68.49	116.21	151.81	64.16	68.87	1720.02
II	515.32	302.50	115.45	275.56	73.78	138.33	160.53	72.43	76.93	1730.83
III	527.25	293.76	116.89	280.32	79.00	115.94	170.28	77.64	89.54	1750.64
IV	527.96	296.74	129.89	293.91	71.34	104.86	181.35	88.75	101.94	1796.74
1975 I	520.34	301.18	129.14	311.18	69.80	107.29	186.73	89.97	108.55	1824.48
II	552.54	298.39	122.37	309.63	75.79	110.80	186.94	82.87	98.48	1837.81

Appendix table 5--Farm values for the market basket food product groups, quarterly, 1965-75

Year and quarter		Meat	Dairy	Poultry and eggs	Bakery and cereals	Fresh fruits	Fresh vegetables	Processed fruits and vegetables	Fats and oils	Miscel-laneous products	Market basket total
						Dollars					
1965	I	156.11	78.54	46.05	27.99	13.39	24.76	22.69	12.79	7.12	389.43
	II	180.93	75.84	46.98	27.31	13.81	32.24	11.82	12.01	7.11	418.06
	III	192.84	78.40	49.27	27.75	14.23	22.27	22.60	10.71	7.18	425.25
	IV	194.96	81.43	53.15	28.01	12.67	19.50	22.74	10.73	7.34	430.53
1966	I	209.83	83.67	57.31	28.90	13.67	14.52	11.92	11.93	7.43	459.29
	II	192.09	83.81	52.46	30.07	15.79	23.96	21.67	12.07	7.43	439.36
	III	195.33	91.88	55.41	32.62	16.06	23.15	21.04	13.21	7.44	456.13
	IV	174.21	93.49	53.93	30.73	13.80	21.31	20.38	11.71	7.34	426.84
1967	I	172.83	91.19	49.05	30.35	12.27	21.90	19.37	11.41	7.33	415.69
	II	182.78	90.60	40.80	30.24	13.66	22.59	18.39	11.48	7.32	417.95
	III	191.70	91.56	43.84	28.58	15.32	22.61	19.87	10.33	7.37	431.27
	IV	174.59	92.53	40.81	28.12	15.82	20.60	21.36	9.90	7.66	211.39
1968	I	183.85	93.46	43.55	28.66	18.77	25.25	22.22	10.54	7.89	434.19
	II	186.67	94.73	44.74	28.43	20.58	25.63	23.85	10.18	7.81	442.63
	III	193.68	95.72	51.01	26.63	19.57	21.31	23.14	9.09	7.80	447.96
	IV	185.73	96.67	51.40	27.11	16.73	23.29	22.75	9.30	7.92	440.89
1969	I	195.53	98.05	54.63	27.56	16.70	24.47	23.69	10.25	8.14	459.01
	II	223.70	99.18	50.87	27.97	17.31	23.84	24.56	10.06	8.15	485.63
	III	225.15	100.30	56.99	27.42	15.93	22.84	24.11	9.63	8.11	490.49
	IV	214.99	102.69	60.52	28.06	13.71	28.07	23.36	10.05	8.37	489.83
1970	I	227.01	104.47	61.83	28.72	12.32	28.17	22.43	10.76	8.43	504.12
	II	218.83	103.20	45.70	29.33	13.81	28.91	21.79	12.19	8.39	482.16
	III	214.35	103.67	49.69	29.44	16.68	25.03	22.21	11.83	8.33	481.23
	IV	180.52	105.56	46.31	30.56	14.98	21.21	22.81	13.88	8.67	444.50
1971	I	198.81	106.97	47.75	30.55	14.83	26.61	22.65	13.54	8.94	470.64
	II	202.26	106.29	45.27	30.76	17.35	29.49	23.16	13.36	9.09	477.03
	III	211.82	105.83	46.65	30.07	17.94	24.27	23.32	15.21	9.00	484.12
	IV	216.08	106.36	43.02	29.62	16.61	28.81	23.02	14.19	8.95	486.65
1972	I	236.81	108.39	44.96	29.84	14.98	27.37	23.65	12.96	8.95	507.91
	II	242.40	108.55	41.67	30.24	16.27	27.35	24.15	13.41	8.91	512.96
	III	255.51	108.54	47.95	31.48	19.94	29.87	24.13	11.71	8.87	538.00
	IV	250.60	109.97	50.58	36.15	18.82	27.89	24.44	10.03	9.23	537.70
1973	I	303.05	113.15	67.45	38.00	21.74	36.44	24.33	12.39	9.73	626.27
	II	321.54	114.96	73.73	41.52	23.89	36.40	24.73	16.85	10.20	673.82
	III	380.20	124.80	103.79	50.99	22.78	38.62	25.80	20.67	11.08	779.29
	IV	320.39	144.08	81.82	60.09	20.12	30.75	28.74	24.16	13.60	723.74
1974	I	3[illegible].22	151.91	86.70	73.50	20.49	40.46	34.55	29.22	17.09	779.13
	II	273.81	151.12	66.98	60.91	22.50	46.70	25.87	29.83	20.65	708.37
	III	304.40	139.32	72.25	66.73	24.02	36.89	36.28	29.93	23.15	742.98
	IV	293.23	140.97	81.61	75.34	21.46	35.31	40.02	40.97	30.58	759.48
1975	I	284.53	141.64	78.62	63.97	20.16	36.67	40.10	32.20	36.12	724.05
	II	347.77	142.07	73.61	53.42	24.79	40.64	39.25	16.22	18.44	766.19

Appendix table 6--Price spreads for the market basket food product groups, quarterly, 1965-75

Year and quarter	Meat	Dairy	Poultry and eggs	Bakery and cereals	Fresh fruits	Fresh vegetables	Processed fruits and vegetables	Fats and oils	Miscel-laneous products	Market basket total
					Dollars					
1965 I	127.09	100.03	35.52	133.62	27.07	44.94	84.44	24.12	41.48	618.31
II	116.73	100.98	35.36	134.10	30.48	48.82	84.37	25.52	41.37	617.76
III	130.21	99.17	36.57	133.42	32.42	46.91	83.50	26.68	41.43	630.31
IV	130.04	97.51	36.18	133.33	28.28	42.33	83.43	26.52	41.31	618.94
1966 I	132.08	98.06	36.52	134.80	26.74	44.27	86.52	25.72	41.69	626.42
II	137.59	101.37	38.17	134.91	30.48	47.08	88.42	26.47	41.94	646.40
III	137.91	100.86	37.86	136.01	35.25	46.24	88.83	25.64	41.90	650.51
IV	146.87	104.00	38.21	140.81	31.54	44.66	88.61	28.06	42.21	665.02
1967 I	140.56	104.78	36.21	140.67	29.86	45.76	88.84	28.05	42.26	656.99
II	131.64	105.04	38.38	140.63	30.93	47.34	88.91	27.34	42.50	652.63
III	137.00	104.88	37.96	141.86	35.21	48.15	88.92	28.16	42.65	664.70
IV	147.34	105.59	39.15	142.47	30.95	45.13	90.25	28.43	42.62	671.92
1968 I	139.84	105.18	38.28	142.08	31.89	48.18	92.11	27.61	42.47	667.64
II	139.60	106.21	37.33	142.46	34.57	50.09	91.96	27.80	42.77	672.78
III	140.07	107.51	37.35	145.38	39.89	48.93	93.19	28.67	42.90	683.84
IV	146.13	108.44	40.15	145.84	35.77	47.60	92.98	28.46	43.17	688.53
1969 I	141.82	107.67	39.46	146.11	33.20	50.00	91.97	27.59	43.52	681.34
II	136.60	107.67	39.16	147.20	35.84	53.28	91.71	27.85	44.22	683.55
III	157.26	109.01	39.47	149.17	40.41	51.53	92.58	28.22	44.64	712.31
IV	161.41	109.54	41.12	150.94	33.38	50.60	93.28	28.20	45.28	713.75
1970 I	158.98	111.61	43.64	153.45	34.63	54.99	94.68	28.28	46.26	726.55
II	167.26	114.65	43.50	155.08	37.43	58.65	96.58	28.36	47.02	748.53
III	171.72	115.88	42.29	157.25	40.84	54.99	97.76	29.55	47.62	757.90
IV	186.18	116.31	43.34	158.61	35.40	53.73	98.68	28.50	48.00	768.75
1971 I	168.79	116.30	42.14	160.81	35.34	51.10	100.16	30.11	48.04	752.80
II	172.17	118.79	41.99	162.59	38.99	58.96	101.21	31.05	48.30	774.05
III	170.94	120.89	42.33	163.78	44.56	58.68	103.36	29.82	48.80	783.15
IV	168.67	120.54	44.45	162.50	37.10	55.90	103.90	31.42	48.96	773.45
1972 I	174.13	119.82	42.89	162.22	38.52	60.32	103.70	32.68	49.17	783.45
II	171.35	121.10	43.50	162.56	41.24	59.39	103.79	32.17	49.80	784.89
III	177.04	119.16	40.83	159.82	44.05	58.20	103.47	33.11	49.74	785.42
IV	182.31	119.79	41.90	155.97	41.45	62.31	104.55	34.76	49.88	792.93
1973 I	174.85	121.00	42.68	157.73	38.88	64.52	105.92	32.16	49.80	787.56
II	186.45	124.64	46.32	161.99	42.69	72.55	108.43	29.73	50.43	823.23
III	179.67	121.29	48.11	160.47	48.77	78.56	109.01	28.94	50.13	824.38
IV	227.26	131.86	50.12	183.31	48.58	69.83	113.92	35.19	50.83	910.91
1974 I	234.91	140.39	51.96	185.90	48.00	75.75	117.26	34.94	51.78	940.89
II	241.51	151.38	48.47	214.65	51.28	91.63	124.66	42.60	56.28	1022.46
III	222.85	154.44	44.64	213.59	54.98	79.05	134.00	37.71	66.39	1007.66
IV	234.73	155.77	48.28	218.57	49.88	69.55	141.33	47.78	71.36	1037.26
1975 I	235.81	159.54	50.52	247.21	49.64	70.62	146.66	57.77	82.39	1100.43
II	204.77	156.32	48.76	156.22	51.00	70.16	147.69	56.67	80.04	1071.62

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